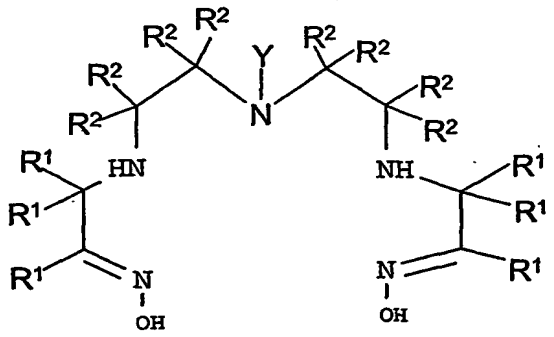
CLAIMS.

1. A technetium complex composition which comprises a metal complex of the radioisotope ^{x}Tc with a ligand of Formula (I):



(I)

where:

each R^1 and R^2 is independently an R group;

x is 94m, 99 or 99m;

Y is $-(A)_n-Z$

where: Z is a biological targeting moiety of molecular weight less than 5,000;

$-(A)_n-$ is a linker group where each A is independently $-CO-$, $-CR_2-$, $-CR=CR-$, $-C\equiv C-$, $-CR_2CO_2-$, $-CO_2CR_2-$, $-NR-$ $-NRCO-$, $-CONR-$, $-NR(C=O)NR-$, $-NR(C=S)NR-$, $-SO_2NR-$, $-NRSO_2-$, $-CR_2OCR_2-$, $-CR_2SCR_2-$, $-CR_2NRCR_2-$, a C_{4-8} cycloheteroalkylene group, a C_{4-8} cycloalkylene group, a C_{5-12} arylene group, or a C_{3-12} heteroarylene group or a polyalkyleneglycol, polylactic acid or polyglycolic acid moiety;

n is an integer of value 0 to 10;

each R group is independently H or C_{1-10} alkyl, C_{3-10} alkylaryl, C_{2-10} alkoxyalkyl, C_{1-10} hydroxyalkyl, C_{1-10} fluoroalkyl, or 2 or more R groups, together with the atoms to which they are attached form a carbocyclic, heterocyclic, saturated or unsaturated ring;

wherein less than 10 % of the ^{x}Tc present in the technetium complex composition comprises transient ^{x}Tc complexes of the ligand of Formula I.

2. The technetium complex composition of claim 1, wherein less than 5 % of the ^{x}Tc present in the technetium complex composition comprises transient ^{x}Tc complexes of the ligand of Formula I.

3. The technetium complex composition of claims 1 or 2, further characterised in that less than 5 % of the ^{x}Tc present in the technetium complex composition comprises lipophilic ^{x}Tc complexes of the ligand of Formula I.

4. The technetium complex composition of claim 3, wherein less than 3 % of the ^{x}Tc present in the technetium complex composition comprises lipophilic ^{x}Tc complexes of the ligand of Formula I.

5. The technetium complex composition of claims 1 to 4, where x is 99m.

6. The technetium complex composition of claims 1 to 5, where Z is a peptide of 3 to 20 amino acids.

7. The technetium complex composition of claim 6, wherein the peptide of 3 to 20 amino acids is a fragment of α2-antiplasmin.

8. The technetium complex composition of claim 7, wherein the fragment of α2-antiplasmin comprises the tetrapeptide Asn-Gln-Glu-Gln.

9. The technetium complex composition of claim 8, wherein the fragment of α2-antiplasmin comprises the peptide:

Asn-Gln-Glu-Gln-Val-Ser-Pro-Xaa-Thr-Leu-Leu-Lys-Gly,

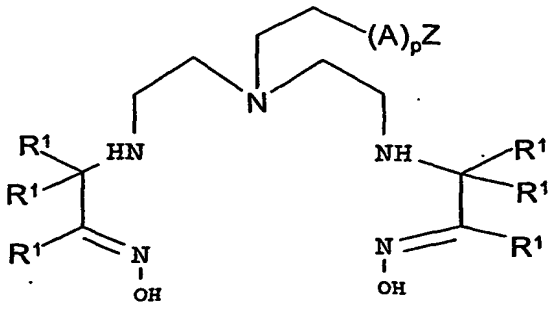
where Xaa is Tyr or I-Tyr.

10. The technetium complex composition of claims 1 to 9, wherein Y is

$-CH_2CH_2-NR-(A)_m-Z$, where m is an integer of value 0 to 5.

11. The technetium complex composition of claims 1 to 10, where each R^1 is independently C_{1-3} alkyl, C_{2-4} alkoxyalkyl, C_{1-3} hydroxyalkyl, or C_{1-3} fluoroalkyl.

12. The technetium complex composition of claims 1 to 11, where the ligand is of Formula (II):



(II)

where: each R^1 is independently C_{1-3} alkyl or C_{1-3} fluoroalkyl; and
p is an integer of value 0 to 3.

13. The technetium complex composition of claim 12, where $(A)_p$ is –CO- or –NR-.

14. The technetium complex composition of claims 12 and 13, where each R^1 is CH_3 and $(A)_p$ is NH and Z is Ac-Asn-Gln-Glu-Gln-Val-Ser-Pro-Xaa-Thr-Leu-Leu-Lys-Gly-, where Xaa is Tyr or I-Tyr, and Ac is N-acetyl.

15. The technetium complex composition of claims 1 to 14, which further comprises a radioprotectant.

16. The technetium complex composition of claim 15, where the radioprotectant is *para*-aminobenzoic acid or a biocompatible salt thereof.

17. A radiopharmaceutical which comprises the technetium complex composition of claims 1 to 16 in a form suitable for mammalian administration.

18. The radiopharmaceutical of Claim 17, where ^{x}Tc is ^{99m}Tc.

19. A kit for the preparation of the technetium radiopharmaceutical of claims 17 or 18, which comprises:

(i) the ligand of Formula (I) of claim 1;

(ii) a biocompatible reducing agent,

(iii) a weak organic acid or a salt thereof with a biocompatible cation.

20. The kit of claim 19, wherein the ligand is as defined in Claims 6 to 11.

21. The kit of claim 19, where the ligand is of Formula II as defined in claims 12 to 14.

22. The kit of claims 19 to 21, which further comprises a pH-adjusting agent.

23. The kit of claims 19 to 22, wherein the biocompatible reducing agent comprises stannous.

24. The kit of claims 19 to 23, wherein the weak organic acid is acetic acid, citric acid, tartaric acid, gluconic acid, glucoheptonic acid, benzoic acid, a phenol or a phosphonic acid.

25. The kit of claims 19 to 24, which further comprises a radioprotectant.

26. The kit of claim 25, wherein the radioprotectant comprises *para*-aminobenzoic acid or a biocompatible salt thereof.

27. The kit of claims 19 to 26, which is lyophilised.

28. The kit of claims 19 to 27, which comprises:

(i) the ligand of Formula II of claim 14;

(ii) a biocompatible reducing agent which comprises stannous;

(iii) a weak organic acid or salt thereof with a biocompatible cation which comprises methylenediphosphonic acid;

(iv) a radioprotectant which comprises *para*-aminobenzoic acid or a biocompatible salt thereof;

(v) a pH-adjusting agent which comprises sodium bicarbonate.

29. A method of diagnostic imaging of thrombi using the radiopharmaceutical of claim 17, wherein the technetium complex composition is as defined in claims 7 to 9.